

REMARKS/ARGUMENTS

The Office Action mailed March 7, 2005, has been received and reviewed. Claims 1 through 21 are currently pending in the application. Claims 1 through 21 stand rejected. Applicants have amended claims 1, 5, 9, 13, 17 and 21, and respectfully request reconsideration of the application as amended herein.

Preliminary Amendment

Applicants' undersigned attorney notes the filing herein of a Preliminary Amendment on February 12, 2004, which filing was not acknowledged in the outstanding Office Action. Should the Preliminary Amendment have failed for some reason to have been entered in the Office file, Applicants' undersigned attorney will be happy to have a true copy thereof hand-delivered to the Examiner.

Double Patenting Rejection Based on U.S. Patent No. 6,655,234

Claims 1 through 8 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,655,234. In order to avoid further expenses and time delay, Applicants elect to expedite the prosecution of the present application by filing a terminal disclaimer to obviate the double patenting rejections in compliance with 37 CFR §1.321 (b) and (c). Applicants' filing of the terminal disclaimer should not be construed as acquiescence in the Examiner's double patenting or obviousness-type double patenting rejections. Attached is the terminal disclaimer and the required fee is to be charged to Baker Hughes Incorporated Deposit Account #02-0429.

35 U.S.C. § 112 Claim Rejections

Claims 5 through 16 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claims 5, 9 and 13 to overcome the rejection, and respectfully request withdrawal of same.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,316,095 to Tibbitts in View of United Kingdom Patent No. GB 2,236,699 to Gasper et al., and U.S. Patent No. 4,743,481 to Quinlan et al.

Claims 1, 5, 9, 13, and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tibbitts (U.S. Patent No. 5,316,095) in view of Gasper et al. (U.K. Patent No. GB2,236,699), and Quinlan et al. (U.S. Patent No. 4,473,481). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Applicant respectfully submits the 35 U.S.C. § 103(a) obviousness rejections of claims 1, 5, 9, 13 and 17 are improper because a *prima facie* case of obviousness has not been made.

There is no suggestion or motivation in the references or from the knowledge generally available in the prior art which would lead one of ordinary skill in the art to combine the teachings of the GB '699 patent with Tibbitts. Tibbitts, assigned to the same assignee as the present invention, describes drill bit cutting elements with cooling channels. The subject matter of Tibbitts is concerned with improving performance by locating cooling channel outlets near the peripheral edge of the elements' cutting surface, and gives only a general description of methods for fabricating such cutting elements (see Col. 1, lines 28-36). As the Examiner has noted, no mention is made of filling the internal cavity of the cutting element with a substantially non-compressible filler material during abrasive table formation and removing the filler material from the internal cavity after forming the superabrasive table on the attachment surface.

The GB '699 patent teaches a method for excluding contaminants from hollow articles, such as turbine blades, during manufacturing by filling the internal cavities of the hollow articles with a cured expandable polymeric material. After manufacturing is complete, the polymeric material is thermally removed by heating and gasification (see page 7, lines 6-29). The Examiner has indicated the motivation for adding the filler of GB '699 with Tibbitts would be to prevent contaminants from entering the internal cavities of the cutting elements during superabrasive table formation. This modification, however, would be incompatible with the elevated temperature and high pressure required for the highly specialized technology of abrasive table attachment to a substrate or formation thereon, which high temperatures and pressures are now positively recited in independent claims 1 and 17 as amended herein. First, the polymeric materials of GB '699 would be collapsed by the recited minimum high pressure applied during superabrasive table formation, and therefore could not prevent entry of contaminants. Second, while having thermal removal temperatures sufficient for the processes envisioned concerning turbine blade manufacturing, polymeric materials would break down under the recited temperature range of abrasive table formation (see GB '699 page 4, line 22 - page 5, line 18). The thermal removal process preferred by GB '699 requires that the filler material have a removal temperature greater than any of the temperatures used on the component during manufacturing. In the context of manufacturing cutting elements, any material with a removal temperature sufficient to withstand the table formation would require heating to unduly high temperatures for removal, destroying both the superabrasive table and the substrate to which it is bonded. Accordingly, there is no motivation or reasonable expectation of success for the combination of GB '699 with Tibbitts as presented.

Moreover, Applicant respectfully submits neither Tibbitts nor the GB '699 patent, alone or in combination, teach or suggest all of the limitations of the rejected claims. Claims 1 and 17 recite the limitation of filling the internal cavity with "...a substantially incompressible, packed, particulate filler material." The GB '699 patent does not teach using a substantially incompressible filler material, but rather an expandable polymeric filler material falling within a preferred density range (see GB '699 page 3, line 30 - page 4, line 5). Tibbitts makes no reference to filler materials.

The Examiner has rejected claims 1, 5, 9, 13, and 17 as obvious over Tibbitts in view of GB '699 and further in view of Quinlan et al. The Examiner is citing Quinlan et al. for the proposition that it is old and well known in the art to "use incompressible filler material for the purpose of supporting performs (sic) that are to be subjected to high temperatures and pressure as well as removal of the filler material after the high pressure/temperature process." Applicants respectfully assert that Quinlan et al. fails to provide any teaching of the use of a substantially incompressible filler material in the high temperature, high pressure process as now recited in the independent claims. Specifically, Quinlan et al. teaches the use of a "relatively incompressible" filler material which supports a preform in an injection molding process. Referring to the specification of Quinlan et al., the apparent range of temperatures encountered are "about 250°F to about 350°F or higher" (Col. 3, line 48) and the pressures encountered in injection molding are "often on the order of from 5,000 to about 10,000 psi." (Col. 4, lines 57-58). It is also notable that the injection molding process molds plastic material onto a preform, which remains as part of the end product. (Col. 4, line 68 through Col. 5, line 2). Thus, Quinlan merely teaches the use of a "relatively incompressible" filler material which is relatively incompressible at *far lower* temperatures and pressures that are claimed in Applicants' process in a process for *injection molding plastic* articles wherein a preform remains inside of, and as a part of, the end product. Applicants respectfully submit there is, and can be, no motivation to combine such a teaching with Tibbitts, alone or in combination with GB '699. Rather, any such motivation would have to come from an impermissible hindsight reconstruction of Applicants' claimed invention based on Applicants' own disclosure. Further, even if such a combination were to be attempted, there would still be absent the requisite expectation of success. Finally, even if such a combination were to be made, the combination would not teach the limitations of independent claims 1 and 5 as amended.

The nonobviousness of independent claim 1 precludes a rejection of claims 5, 9 and 13 which depends therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious.

Therefore, the Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claims 1 and 17 and dependent claims 5, 9 and 13.

Obviousness Rejection Based on U.S. Patent No. 5,316,095 to Tibbitts in View of United Kingdom Patent No. GB 2,236,699 to Gasper et al., and U.S. Patent No. 4,743,481 to Quinlan et al., and Further in View of U.S. Patent No. 4,802,525 to Heine et al.

Claims 2, 6, 10, 14 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tibbitts (U.S. Patent No. 5,316,095) in view of Gasper et al. (U.K. Patent No. GB2,236,699), and Quinlan et al. (U.S. Patent No. 4,473,481), and further in view of Heine et al. (U.S. Patent No. 4,802,525). Applicants respectfully traverse this rejection, as hereinafter set forth.

Applicant respectfully submits the 35 U.S.C. § 103(a) obviousness rejections of claims 2, 6, 10, 14 and 18 are improper because a *prima facie* case of obviousness has not been made.

Claim 2 depends directly from independent claim 1, claims 6, 10 and 14 depend indirectly from claim 1 and claim 18 depends directly from independent claim 17. Claims 1 and 17 recite the limitation of filling the internal cavity with "...a substantially incompressible packed, particulate filler material." As discussed above, neither Tibbitts, the GB '699 patent, and Quinlan et al., alone or in combination, teach or suggest this limitation in the context of the claimed temperatures and pressures employed. Heine et al. also fails to teach or suggest this limitation, and therefore, the references as applied do not establish a *prima facie* case of obviousness. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Moreover, for the same reasons as described above, there is no suggestion or motivation in the references or from the knowledge generally available in the prior art which would lead one of ordinary skill in the art to combine the teachings of the GB '699 patent and Quinlan et al. with Tibbitts. The addition of Heine et al. does not provide any disclosure, teaching, or suggestion that would remedy this deficiency. Specifically, Heine et al. teaches a method for removing mold particles from the outside of a casting by applying shock waves to the surface of the mold and casting in a bath. Heine et al. deals with exterior molds made of materials such as ceramics, and is an entirely different class of technology than that of GB '699 and Tibbitts. Further, the shock wave method of Heine et al. works on the basis of breaking up brittle materials (see col. 2, lines

1-13). There would be a lack of reasonable expectation of success that shock waves would work for removing the cured expandable polymeric material of GB '699 from internal cavities in the Tibbitts cutting elements.

For these reasons, Applicant respectfully submits that the combination of GB '699, Quinlan et al. and Heine et al. with Tibbitts does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), and respectfully requests the rejection of claims 2, 6, 10, 14 and 18 be withdrawn.

Obviousness Rejection Based on U.S. Patent No. 5,316,095 to Tibbitts in View of United Kingdom Patent No. GB 2,236,699 to Gasper et al., and U.S. Patent No. 4,743,481 to Quinlan et al., and Further in View of U.S. Patent No. 1,554,697 to Alden

Claims 3, 4, 7, 8, 11, 12, 15, 16, and 19 through 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tibbitts (U.S. Patent No. 5,316,095) in view of Gasper et al. (U.K. Patent No. GB2,236,699), and Quinlan et al. (U.S. Patent No. 4,473,481), and further in view of Alden (U.S. Patent No. 1,554,697). Applicants respectfully traverse this rejection, as hereinafter set forth.

Applicant respectfully submits the 35 U.S.C. § 103(a) obviousness rejections of claims 3, 4, 7, 8, 11, 12, 15, 16, and 19 through 21 are improper because a *prima facie* case of obviousness has not been made.

For the same reasons as described above, there is no suggestion or motivation in the references or from the knowledge generally available in the prior art which would lead one of ordinary skill in the art to combine the teachings of the GB '699 patent and/or Quinlan et al. with Tibbitts. The addition of Alden does not provide any disclosure, teaching, or suggestion that would remedy this deficiency. Alden teaches a process for molding hollow articles wherein a core of water soluble material, such as salt, is used to facilitate removal of the core after molding. The core in Alden is used to form a cavity within an article during molding, which would not suggest a reason or motivation for filling in existing internal cavities in the cutting elements of Tibbitts during the nonanalogous process of superabrasive table formation on, or attachment to, a substrate. Further, Alden teaches that it is desirable that the core used in the molding process have a higher melting point than the material which is being molded (see Col. 2, lines 61-84).

This teaches away from the thermal removal process preferred by GB '699. Further, the environment of Alden is markedly different than the ultra high-temperature, ultra high-pressure environment used in Applicant's process as claimed presently. It is noted that the molding in Alden is conducted at approximately 1800 pounds per square inch page 2, Col. 1, lines 30-33, and the phenol and aldehyde compounds Alden molds would be destroyed at anything approaching the temperature employed by Applicant. Thus, there would be no motivation or suggestion based upon Alden to employ salt as claimed in Applicant's process. Accordingly, Applicant respectfully submits there is no teaching or suggestion in the cited references that would provide motivation for the proposed combination, and that any such modification would be based solely on the benefit of hindsight provided by Applicant's disclosure.

Tibbitts, the GB '699 patent, Quinlan and Alden, alone or in combination, also fail to teach or suggest all of the limitations of the rejected claims. Claims 3, 7, 11, 15 and 19 each recite "... the filler material remains solid at the elevated temperature and high pressure and becomes fluid at a lesser temperature and a lesser pressure." None of the cited references describe a filler material having these physical properties.

For these reasons, Applicant again respectfully submits that the combination of GB '699, Quinlan et al. and Alden with Tibbitts does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), and respectfully requests the rejection of claims 3, 4, 7, 8, 11, 12, 15, 16, and 19 through 21 be withdrawn.

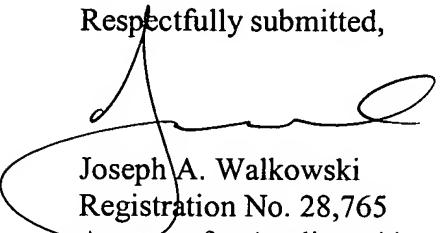
ENTRY OF AMENDMENTS

The amendments to claims 1, 5, 9, 13, 17 and 21 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1 through 21 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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